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(54) **Apparatus for breaking tissue connections in poultry suspended by the feet**

(57) The invention relates to an apparatus (50) for breaking tissue connections in poultry (20) suspended by the feet, prior to the evisceration of this poultry, which viscera comprises the gullet, gizzard (23) and the glandular stomach and which tissue connections connect a portion of the viscera with belly fat located at the breast side of the inner cavity wall of the poultry, comprising an instrument (30) to be inserted into the poultry via an incision provided at the vent side for performing a movement inside the poultry to break the tissue connections, wherein the instrument breaks the tissue connections between the belly fat and the gizzard (23).

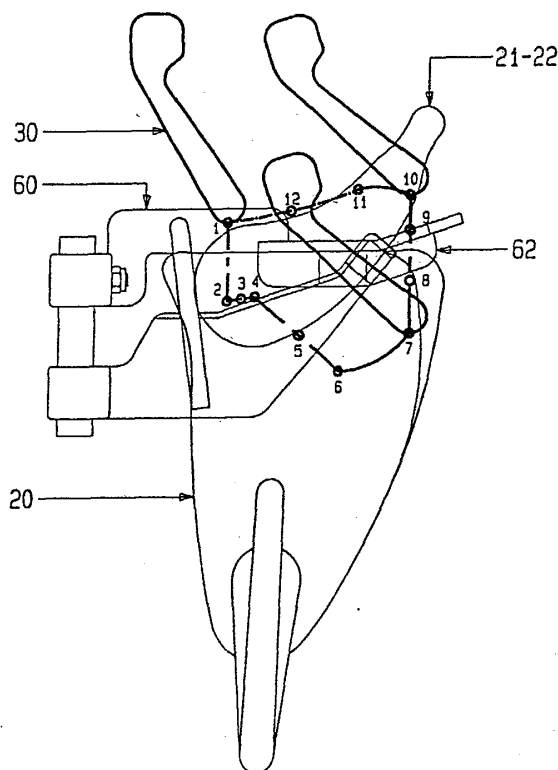


FIG 1

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## Description

[0001] The invention relates to an apparatus for breaking tissue connections in poultry suspended by the feet, prior to the evisceration of this poultry, which viscera comprises the gullet, gizzard and the glandular stomach and which tissue connections connect a portion of the viscera with belly fat located at the breast side of the inner cavity wall of the poultry, comprising an instrument to be inserted into the poultry via an incision provided at the vent side for performing a movement inside the poultry to break the tissue connections.

[0002] Such an apparatus is known from EP-A-1 018 890.

[0003] In the known apparatus a supporting element is used that is inserted into the poultry via a hole previously provided in the poultry, performing a rotating movement inside the poultry so as to loosen the belly fat from the glandular stomach of the poultry. In this way the subsequent removal of the viscera encounters less resistance during this evisceration, and the removal can be performed more easily. A further advantage is that due to the belly fat being left, the poultry may be heavier so that the poultry brings a higher profit.

[0004] According to the invention, an apparatus is proposed that in accordance with the prior art is provided with an instrument for breaking tissue connections between the belly fat and the viscera, and which is characterized in that the instrument breaks the tissue connections between the belly fat and the gizzard.

[0005] The invention is based on the insight that the belly fat in the lower abdominal cavity of the poultry and unattached to the belly skin but attached to the sides in the groin, is grown together with the stomach fat attached to the gizzard. As the instrument according to the invention performs a movement focused on breaking this fusion growth, the amount of belly fat remaining in the poultry can be increased.

[0006] For an effectively performed movement for realising the above mentioned objective of the invention it is desirable for the instrument to be a spoon without any sharp edges.

[0007] In a further aspect of the invention, the apparatus is characterized in that the instrument - viewed from the breast side of the poultry - performs a movement oriented to the left of an imaginary body axis of the poultry. This measure is based on the knowledge that the poultry has an asymmetric build, which is in particular owing to the fact that it is the left half of the belly fat that is grown together with the stomach fat, so that it is precisely this connection which ensures that during evisceration belly fat is removed from the poultry together with the viscera.

[0008] To improve the efficiency of the apparatus according to the invention, the instrument, after insertion into the poultry to a first predetermined position, is moved substantially sideways to a second position near a side of the abdominal cavity of the poultry, from where

the instrument is moved further into the poultry downward and forward to a third, deepest position from where the instrument leaves the poultry in a substantially upward movement, scraping along the gizzard. Desirably then, during the upward movement the instrument breaks the tissue connections between the gizzard and the belly fat, so as to leave the gizzard and belly fat in the abdominal cavity of the poultry.

[0009] The apparatus is preferably further provided with a centring brace designed to work together with the instrument, wherein the centring brace during the upward movement of the instrument offers resistance to the removal of gizzard and belly fat from the poultry. This assists the efficacy of the apparatus according to the invention.

[0010] Conveniently, the centring brace is provided with a slot through which the instrument leaves the poultry in the upward movement.

[0011] In a further aspect of the apparatus according to the invention, the same is characterized in that at its lower side, the centring brace is provided with a plate arranged next to the slot. This provides a flat surface along which the instrument can be moved upward, while the plate pushes the belly skin downward.

[0012] Hereinbelow the invention will be further elucidated by way of a non-limiting exemplary embodiment and with reference to the drawing.

[0013] In the drawing, Figures 1, 2 and 3 schematically show a side elevation, front elevation and top view, respectively of a carcass of poultry, such as a chicken, suspended by the legs, schematically illustrating some elements of the apparatus in the course of a processing track.

[0014] Figure 4 is a cross-sectional view of the apparatus according to the invention.

[0015] Figures 5a and 5b show a side and top view of the centring brace of the apparatus according to the invention.

[0016] Similar parts in the figures carry the same reference numerals.

[0017] In a manner well known to the person skilled in the art and therefore shown only in outline, Figure 4 shows the poultry 20 being conducted via an overhead conveyor 40 along a number of processing stations.

[0018] One of the processing stations provided in the path of the overhead conveyor is the present apparatus 50 according to the invention for breaking tissue connections in the poultry 20 suspended by the legs.

[0019] The person skilled in the art is quite familiar with the fact that the poultry possesses viscera comprising gullet, gizzard and glandular stomach. The person skilled in the art also knows that said viscera are at least partly connected with belly fat located at the breast side of the inner cavity wall of the poultry 20. There is no need therefore to elucidate or illustrate this in the figures.

[0020] The apparatus 50 according to the invention is embodied with an instrument 30 resting on solid ground, following a path inside the poultry 20, symbolised by a

number of positions 1 to 12 indicated in the Figures 1-3 with reference numerals. In the Figures 1-3 these positions are connected with each other by dotted lines.

[0021] The above mentioned instrument 30 is preferably a spoon without any sharp edges, and can be inserted from the top side into the poultry suspended by the legs for performing the movement in accordance with the invention to break the targeted tissue connections in the poultry 20.

[0022] As Figures 2 and 3 clearly show, the movement performed in the poultry 20 is, viewed from the breast side of the poultry, a left from an imaginary body axis of the poultry 20 oriented movement.

[0023] From a starting position 1, the instrument is inserted into the poultry (see Figures 1 and 2) to a first predetermined position 2. The instrument 30 then moves substantially sideways as clearly showed in the Figures 2 and 3 to a second position 4 near a side of the abdominal cavity of the poultry. From this second position 4, the instrument 30 moves further into the poultry 20 downward and forward (see in particular Figures 1 and 2) until the instrument 30 has reached a third, deepest position 6. It is from this deepest position 6 that the instrument 30 leaves the poultry 20 in a substantially upward movement while scraping along the gizzard 23 of the poultry.

[0024] During this upward movement, the instrument 30 breaks the tissue connections between the gizzard 23 and the belly fat, leaving both the gizzard and the belly fat in the abdominal cavity of the poultry 20. The instrument 30 and the centring brace 60, which is preferably included in the apparatus co-operate effectively, the centring brace 60 being shown in its operative configuration in the Figures 1 and 3, and separately in the Figures 5a and 5b in side and top view, respectively. During the upward movement of the instrument 30, this centring brace 60 resists the removal of gizzard and belly fat from the poultry 20. To this end the centring brace 60 possesses a slot 61 clearly shown in Figure 5b, through which the instrument 30 leaves the poultry 20 in the upward movement. This upward movement corresponds with the series of positions shown in Figure 3 and carrying the reference numerals 7 to 10.

[0025] Figure 1 and Figure 5a further show that at its lower side, the centring brace 60 possesses a plate 62 arranged next to the slot 61, forming a flat surface along which the instrument 30 can be moved upward. In doing so, the plate 62 pushes the belly skin downward.

## Claims

1. An apparatus for breaking tissue connections in poultry suspended by the feet, prior to the evisceration of this poultry, which viscera comprises the gullet, gizzard and the glandular stomach and which tissue connections connect a portion of the viscera with belly fat located at the breast side of the inner

cavity wall of the poultry, comprising an instrument to be inserted into the poultry via an incision provided at the vent side for performing a movement inside the poultry to break the tissue connections, **characterised in that** the instrument breaks the tissue connections between the belly fat and the gizzard.

2. An apparatus according to claim 1, **characterised in that** the instrument is a spoon without any sharp edges.

3. An apparatus according to claim 1 or 2, **characterised in that** the instrument - viewed from the breast side of the poultry - performs a movement oriented to the left of an imaginary body axis of the poultry.

4. An apparatus according to one of the claims 1-3, **characterised in that** the instrument, after insertion into the poultry to a first predetermined position (2), is moved substantially sideways to a second position (4) near a side of the abdominal cavity of the poultry, from where the instrument is moved further into the poultry downward and forward to a third, deepest position (6) from where the instrument leaves the poultry in a substantially upward movement, scraping along the gizzard.

5. An apparatus according to claim 4, **characterised in that** during the upward movement, the instrument breaks the tissue connections between the gizzard and the belly fat, leaving the gizzard and the belly fat in the abdominal cavity of the poultry.

6. An apparatus according to one of the preceding claims, **characterised in that** the same is provided with a centring brace designed to work together with the instrument, wherein the centring brace during the upward movement of the instrument offers resistance to the removal of gizzard and belly fat from the poultry.

7. An apparatus according to claim 6, **characterised in that** the centring brace is provided with a slot through which the instrument leaves the poultry in the upward movement.

8. An apparatus according to claim 7, **characterised in that** that at its lower side, the centring brace is provided with a plate arranged next to the slot.

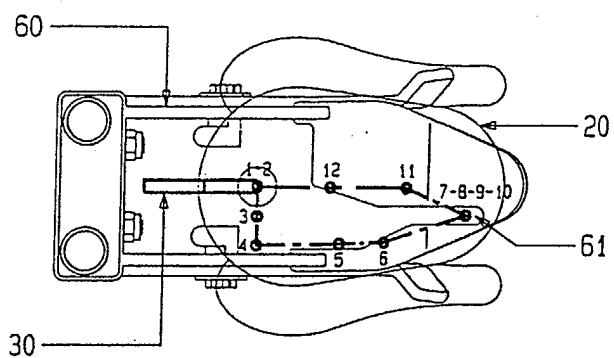


FIG 3

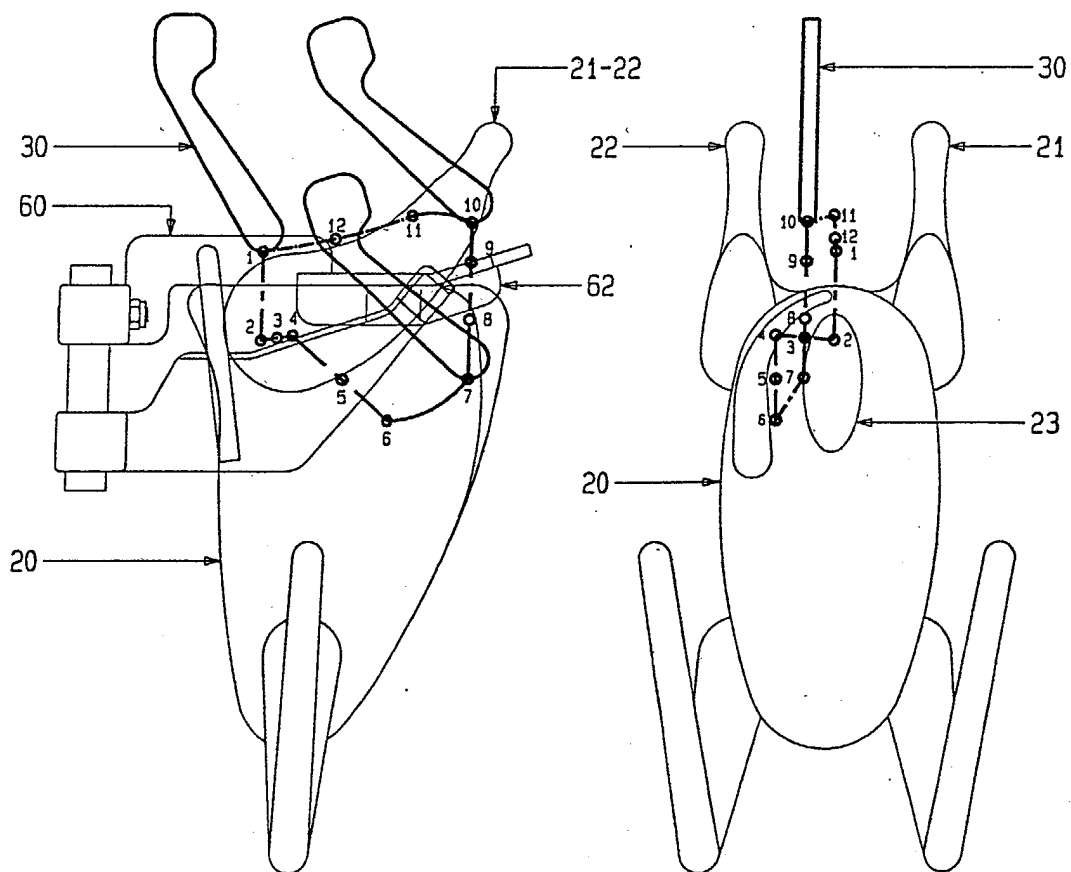


FIG 1

FIG 2

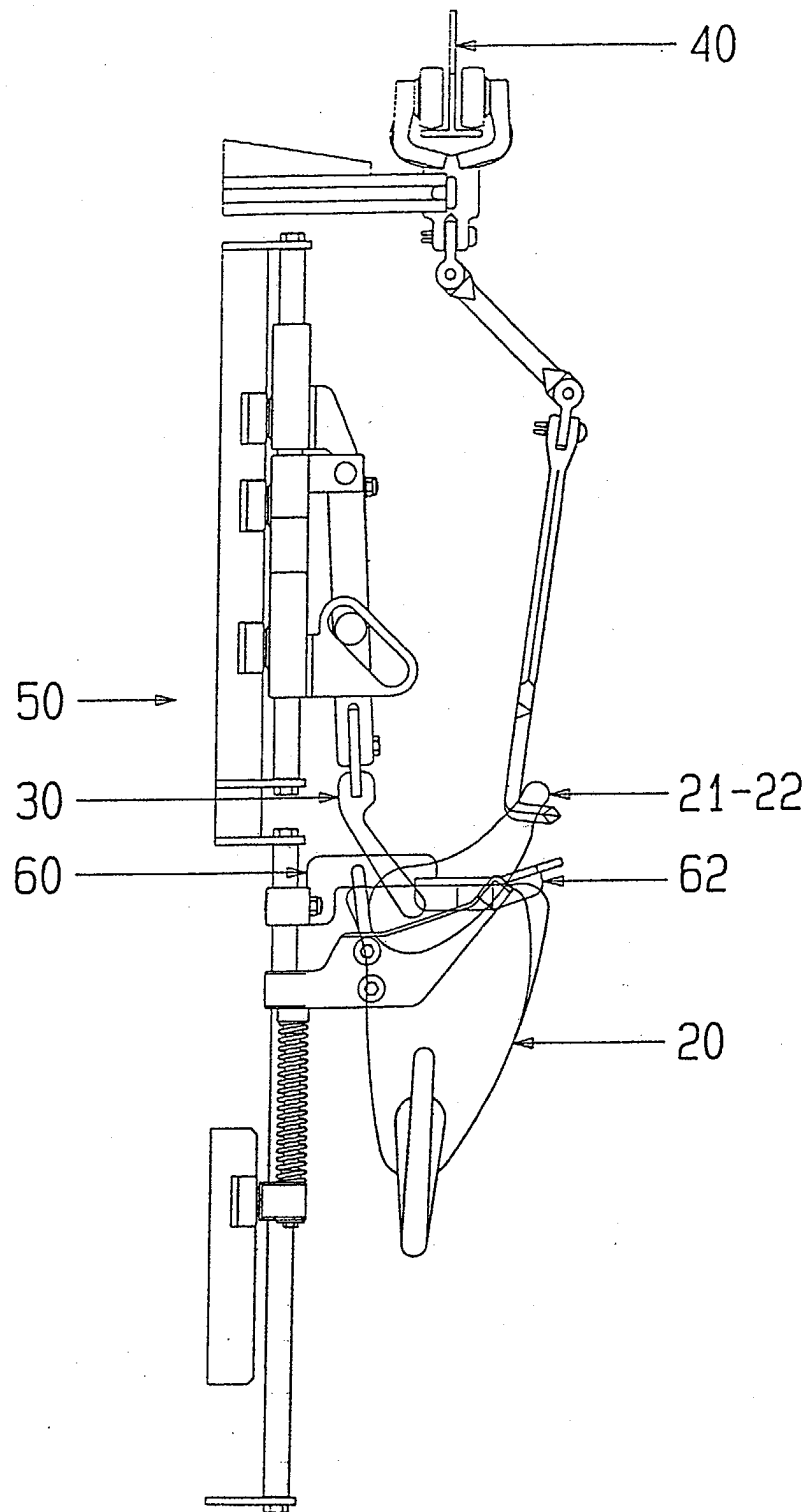
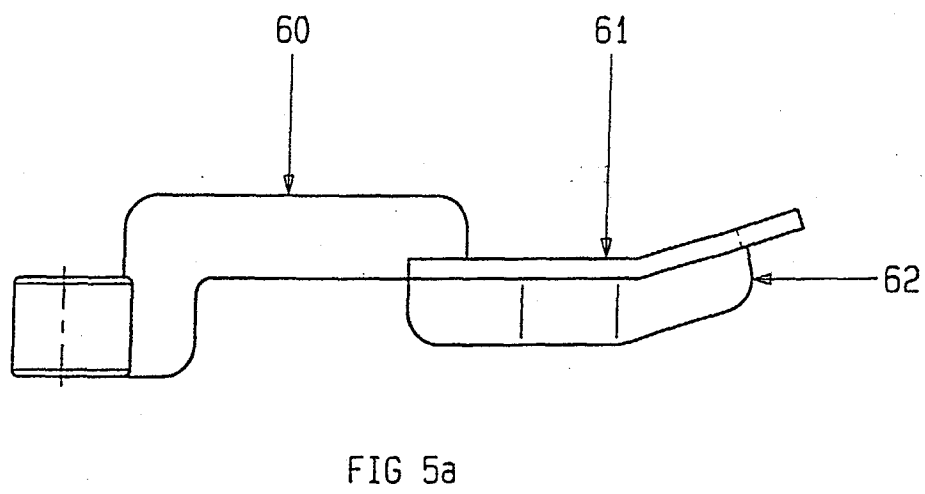
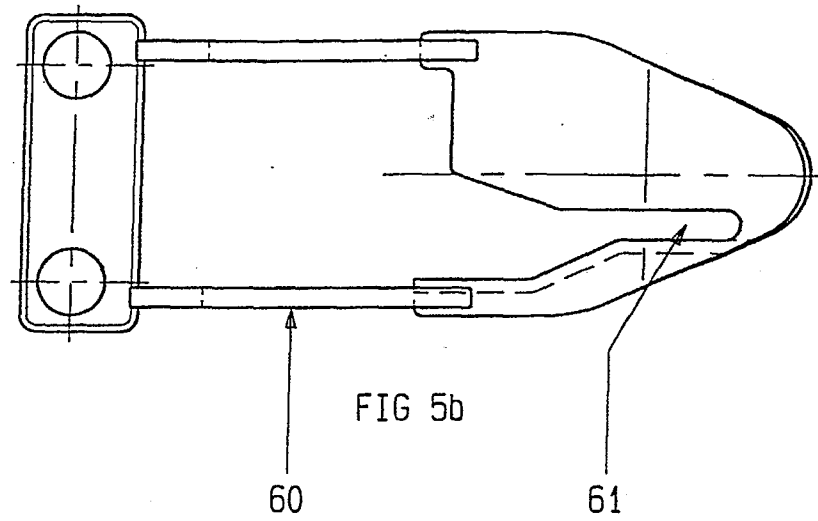


FIG 4





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Application Number  
EP 04 07 6819

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                 |                                                     |                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------|
| Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Citation of document with indication, where appropriate, of relevant passages                                                                                                   | Relevant to claim                                   | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                 |                                                     | A22C                                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                 |                                                     |                                              |
| Place of search<br>The Hague                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                 | Date of completion of the search<br>13 October 2004 | Examiner<br>Herijgers, J                     |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document<br>T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>& : member of the same patent family, corresponding document |                                                                                                                                                                                 |                                                     |                                              |

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